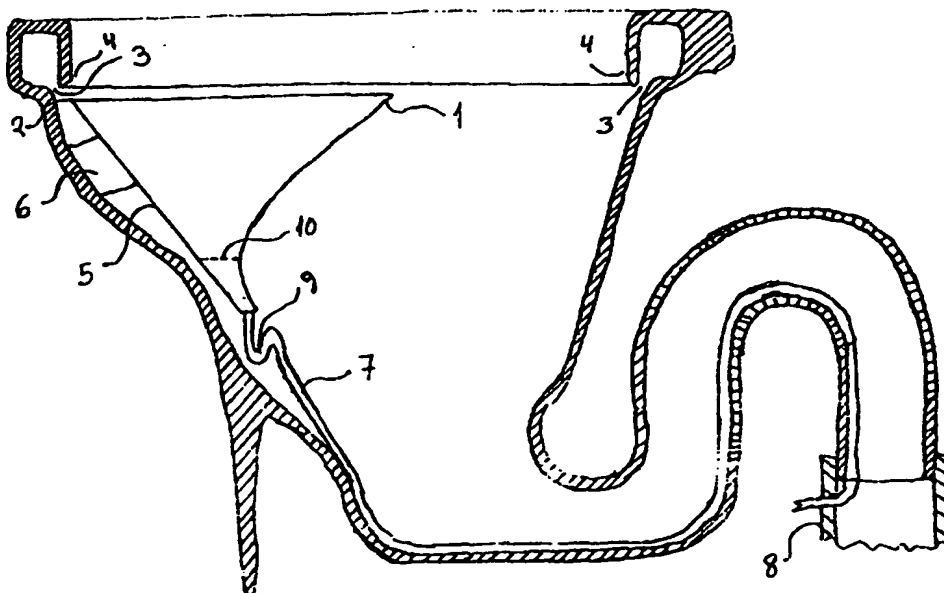




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(21) International Application Number:</b> PCT/FI99/00144 <b>(22) International Filing Date:</b> 24 February 1999 (24.02.99) <b>(30) Priority Data:</b> 980438 26 February 1998 (26.02.98) FI <b>(71)(72) Applicant and Inventor:</b> ÖSTMAN, Henrik, Gustav [FI/FI]; Klockarevägen 17, FIN-68600 Jakobstad (FI).		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i> <i>In English translation (filed in Finnish).</i>

(54) Title: SORTING WC-ACCESSION



## (57) Abstract

A crescent-shaped interior component of a toilet separating urine from faeces that can be easily installed as an accessory in a conventional toilet. The device utilizes part of the flush water intended for normal flushing and conducts the urine-water solution emerging from the device to be absorbed into the soil or to separate collection.

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### Sorting WC-accession

The overwhelming majority of nutrients to be found in human excrements are concentrated in urine. In normal circumstances urine is in fact an aqueous solution devoid of bacteria consisting mainly of the fertilizers urea and superphosphate, while faeces mostly consists only of cellulose fibres, bacteria, and water. The extraction of the nitrogen compound urea from normal wastewater at the sewage purification plant is extremely difficult and expensive since it is diluted in considerable amounts of washing water, flush water etc. And since most of the urea remains left also in so-called high-grade purified sewage, then urine promotes so-called eutrophication intensively and may be an important reason for periodic algal growth along the coasts and shores. Therefore it is preferable that urine already at the source be separated from faeces and either conducted to absorption into the soil or collected in special tanks. Absorption of urine into the soil is a much simpler procedure than filtering the entire amount of a household's sewage since we are dealing with very small amounts of a nutrient solution in principle free of bacteria. In any case regarding detached one- or two-family houses absorption into the soil is in normal circumstances possible without risk of contaminating the groundwater. Furthermore, additional fertilization of the garden may then prove unnecessary.

The invention presented here consists of a device that can be installed in the WC-bowl of an existing, conventional toilet. Special sorting toilets can be found on the market ; they are, however, expensive. Furthermore, it is desirable to be able to utilize existing facilities as much as possible.

So-called urinals that can be installed in WC-bowls are constructed in a similar way, but they are intended for economizing water consumption. They differ from the invention under discussion in that they have a special economizing water connection, and first and foremost in that the urinal's discharge pipe is connected to the main discharge pipe for all sewage water. The invention consists of a crescent-shaped funnel- or cup-formed urine receiver placed in the front part of the WC-bowl. In this way sorting will be anatomically adapted and can easily take place while a person is sitting on the toilet since urine is excreted forward-downward, while faeces is excreted directly downward. During male urination in an upright standing position the urine spray can easily be directed to hit the said device. This can be further facilitated by giving the device partially or totally a colour distinct from that of the toilet. However, it is no great misfortune in case sorting during urination is not performed one hundred percent completely since the entire toilet is flushed and cleansed during one flush. Thus the sorting WC-accessory is not primarily intended for economizing water consumption.

The invention is characterized by the following description with drawings appended. Fig. 1 shows a lateral cross-section of a toilet with the said device installed. Fig. 2 shows the toilet obliquely from above. To facilitate the use of toilet paper the device's rear edge 1 can be made lower than the front edge 2. The device can be manufactured of various materials like e.g. porcelain, enamelled plate or enamelled steel, stainless steel, plastics, plexiglass or glass.

The device can be flushed and cleansed by placing the device's front edge 2 both vertically and laterally at a sufficient distance from the flush edge 4 of the toilet's flush slot 3. Then the device will be cleansed by one toilet flush since a small fraction of the toilet's flush water will cleanse the inner side of the device. Since the device is thus located the device's front edge 2 only collects a smaller part of the toilet's flush water while the most substantial part of the flush water will cleanse the toilet as well as the device's front exterior side 5.

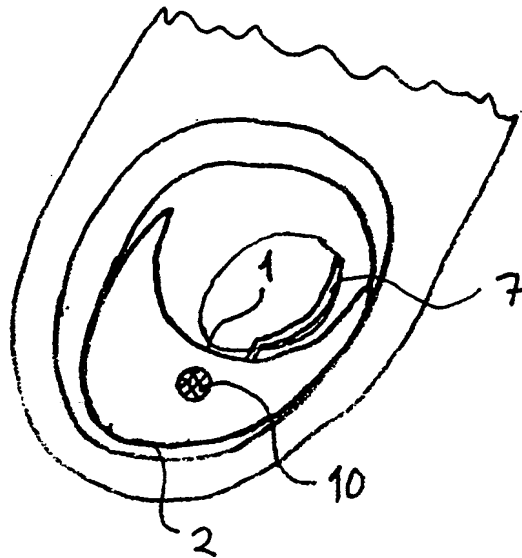
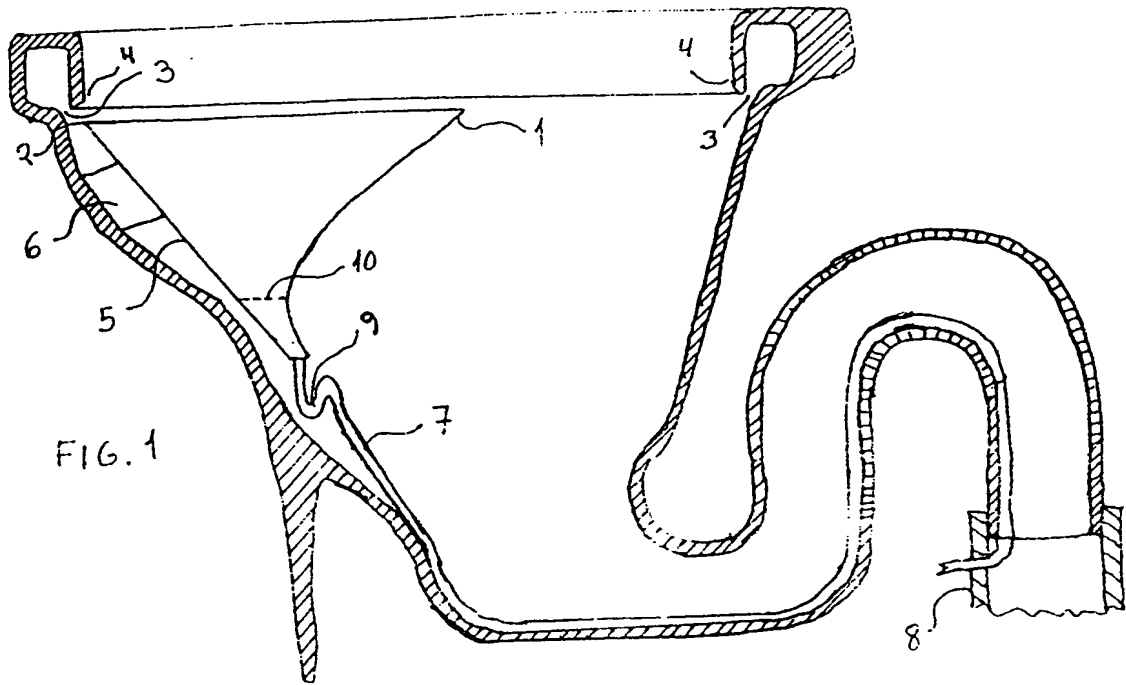
- The distance of the device from the WC-bowl is determined by flanges 6 attached to the device or by other similar spacing pieces. These together with the urine discharge pipe 7 coming from the device attach and retain the device in its place. The device's urine discharge pipe runs along the WC-bowl and flow elbow of the toilet's water trap. The urine discharge pipe 7 opens at the connecting piece 8 joining the toilet's flow elbow with the building's sewage discharge pipe. At the opening site of the urine discharge pipe 7 the urine as well as the flush water collected by the device can for instance be conducted into a storage tank, or, as mentioned above, conducted to be absorbed by the soil.
- 5
- 10 By adjusting the device's distance vertically to the toilet's flush slot 3 utilizing varying modifications of the device's urine discharge pipe 7 the device can be adapted to several different toilet models with the inner measurements of the WC-bowl differing to some extent. However, in case the WC-bowl's inner measurements differ greatly it may be necessary to design the entire device's crescent-shaped funnel or bowl with differing measurements. The length of the device's urine discharge pipe 7 may vary or it may be bent in different ways in order to adjust the device's location in the toilet bowl.
- 15

- To prevent blockage in the thin urine discharge pipe 7 or in the device's water trap 9 the device can be equipped with a lattice sieve 10 on the bottom of the urine bowl. The device's urine discharge pipe 7 and the water trap 9, which can be constructed as one piece, can be made e.g. of stainless steel and must have sufficiently smooth surfaces to prevent paper residue etc. from getting stuck in them when passing through the toilet's water trap.
- 20

## CLAIMS

1. Device for sorting human excrements to urine and respectively to faeces, for installation in the WC-bowl of an existing, conventionally constructed toilet, which by consisting of a urine-collecting bowl or funnel represents a WC-accessory *characterized* in that the said urine-collecting bowl or funnel supported by flanges (6) or other similar spacing pieces is located at such a distance from the flush edge of the toilet's WC-bowl that it utilizes for its flushing and cleansing a smaller part of the amount of water running from the said flush edge during toilet flushing, and in that the device therefore does not require a special water connection of its own.
2. A device according to claim 1, *characterized* in that the water-diluted urine solution emerging from the device during a toilet flush through the device's separate urine discharge pipe (7) is conducted into a special discharge pipe for further collection or absorption into the soil.
3. A device according to claims 1 and 2, *characterized* in that the separate urine discharge pipe (7) of the device runs along the inside of the toilet's water trap elbow, and that the device's separate urine discharge pipe hereby supports the device in the toilet's WC-bowl.
4. A device according to any one of the preceding claims, *characterized* in that the device's water trap is located in the WC-bowl below the crescent-shaped receiver funnel or bowl.
5. A device according to any one of the preceding claims, *characterized* in that the device has been designed in accordance with human anatomic qualifications to sort with sufficient efficiency in a known manner human excrements separating urine from faeces.
6. A device according to any one of the preceding claims, *characterized* in that the device's urine receiver bowl is manufactured of porcelain, enamelled plate or enamelled steel, stainless steel, plexiglass, plastics or glass.
7. A device according to any one of the preceding claims, *characterized* in that the device's colour differs from the toilet's colour which can facilitate the sorting of excrements during performance of normal toilet activities.

1/1



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 99/00144

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: E03D 11/02, E03D 13/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: E03D, A47K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 3486172 A (A.A. GLEICHERT), 30 December 1969 (30.12.69), column 2, line 6 - line 9; column 2, line 39 - line 47 --	1-7
Y	SE 468858 B (G.B. SÖDERBERG), 29 March 1993 (29.03.93), abstract --	1-7
Y	US 4450595 A (G. SACCOMANNO), 29 May 1984 (29.05.84), column 3, line 1 - line 3 --	3
Y	US 5301374 A (E.J. SMILEY), 12 April 1994 (12.04.94), column 3, line 53 - line 55; column 5, line 2 - line 17 --	4



Further documents are listed in the continuation of Box C.



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4 May 1999

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## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/FI 99/00144

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5448784 A (E.J. SMILEY), 12 Sept 1995 (12.09.95), figure 1, abstract --	1-17
A	EP 0507687 A1 (MEDISYSTEM S.A.), 7 October 1992 (07.10.92), figures 1,2, abstract -- -----	1-7



**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

07/04/99

International application No.

PCT/FI 99/00144

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